

#### Features

- 1210 1.1mm SMD LED
- High Brightness
- AllnGaP / InGaN Technology
- Side View
- High reliability
- Clear Lens

# Applications

- Consumer Electronics
- Wearables
- Automobile After Market
- Industrial Equipment

#### Description

The IN-S128DATRG is a popular 1210 top view package with versatile design capabilities. It is a PCB type molding style LED which can be used in various applications.

### **Recommended Solder Pattern**

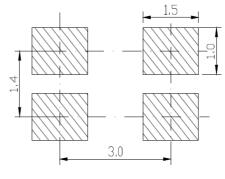
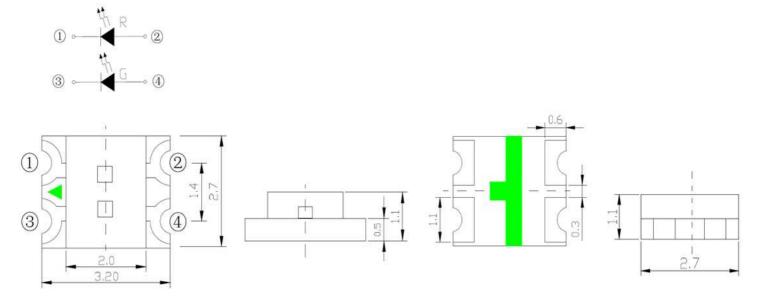


Figure 1. IN-S128DATRG Solder Pattern



Package Dimensions in mm





### Absolute Maximum Rating at 25°C (Note 1)

Product	Emission Color	P₄ (mW)	I⊧ (mA)	I <sub>FP</sub> * (mA)	V <sub>R</sub> (V)	T <sub>OP</sub> (⁰C)	T <sub>ST</sub> (⁰C)	
	Red	75	25	70	E	20 195	-40~+90	
IN-S128DATRG	Green	75	25	100	5	-30~+85		

#### Notes

1. Condition for IFP is pulse of 1/10 duty and 0.1msec width

#### **ESD** Precaution

ATTENTION: Electrostatic Discharge (ESD) protection



The symbol above denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are STATIC SENSITIVE devices. ESD precaution must be taken during design and assembly.

If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

Please be advised that normal static precautions should be taken in the handling and assembly of this device to prevent damage or degradation which may be induced by electrostatic discharge (ESD).

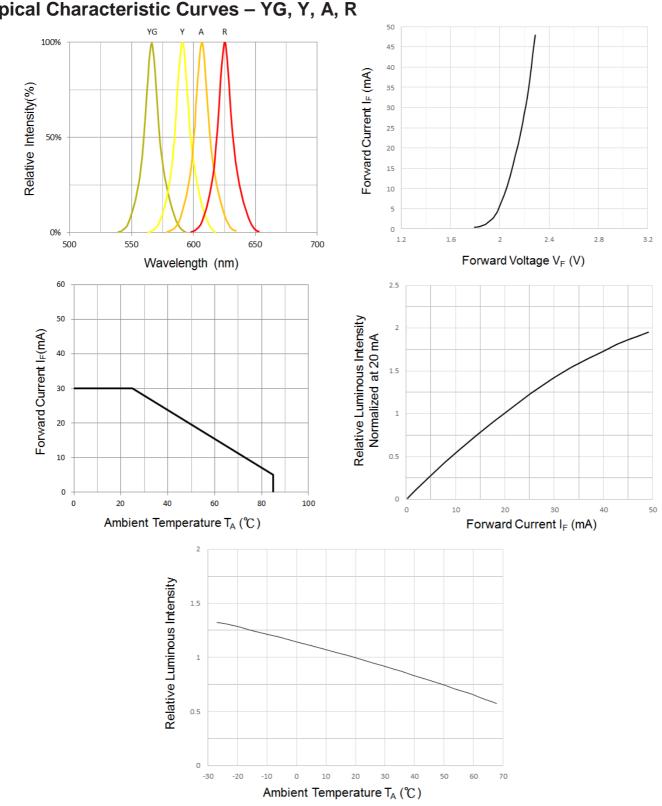
#### **Electrical Characteristics** $T_A = 25$ C (Note 1)

	Emission	ĪF	VF(V)		λ(nm)			Viewing Angle	l*∨(mcd)
Product	Color	(mA)	typ.	max	$\lambda_{D}$	λP	۵λ	<b>2</b> <i>θ</i> 1/2	Тур.
IN-S128DATRG	Red	20	2.2	2.6	622	630	20	130	140
	Green	20	3.2	3.6	522	530	35	130	560

#### Notes

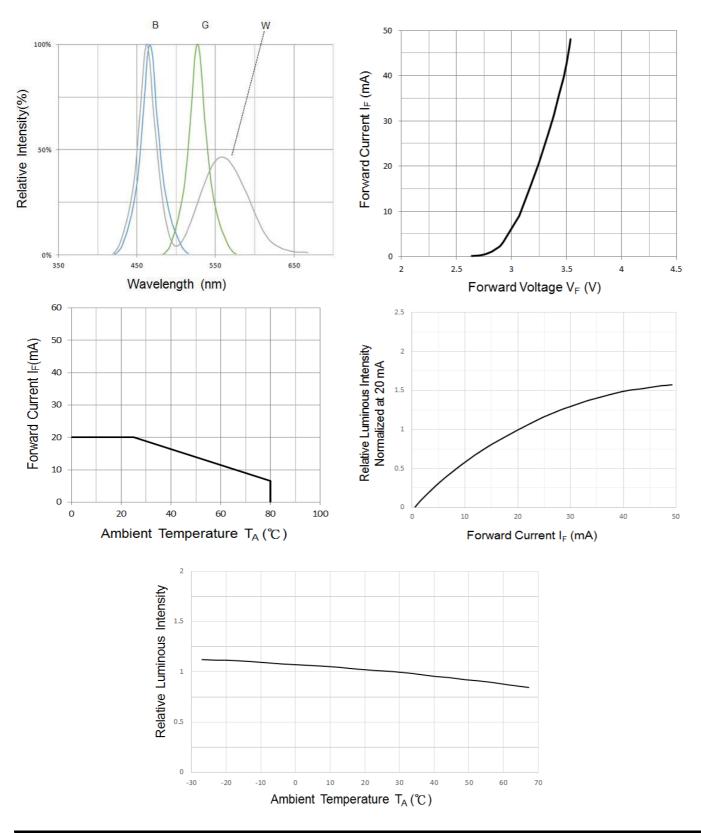
1. Performance guaranteed only under conditions listed in above tables.





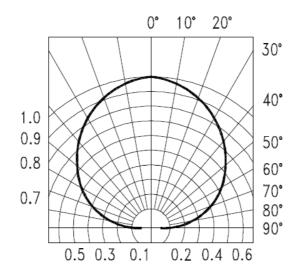


# Typical Characteristic Curves – B, G, W





# **Typical Characteristic Curves – Radiation Pattern**



# **Ordering Information**

Product	Emission Color	Technology	Test Current I <sub>F</sub> (mA)	Luminous Intensity I <sub>V</sub> (mcd) (Typ.)	Forward Voltage V <sub>F</sub> (V) (Typ.)	Orderable Part Number
	Red	AllnGaP	20	140	2.2	IN-S128DATRG
IN-S128DATRG	Green	InGaN	20	560	3.2	IN-SIZODATKG



#### **Label Specifications**



## Inolux P/N:

Ι	Ν	-	S	1	2	8	D	Α	Т			R	G	-	Х	Х	X	х
			Material	Package Variation			Orientation	Current	Lens	Color			Customized Stamp-off					
	ılux 1D		S = PCB Type	128	5DA = 3 T	.2 x 2.7 ri-Chip		mm	T = Top Mount	(Blank) = 20mA	(Blank) = Clear		=630n =530n					

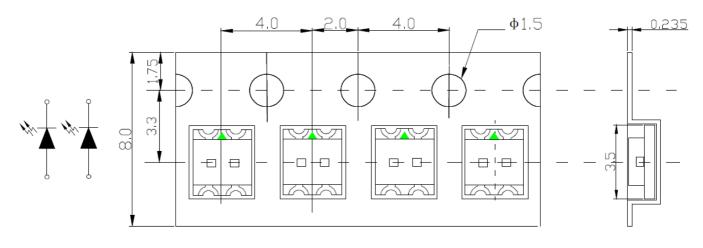
#### Lot No.:

Z	2	0	1	7	01	24	001
Internal		Voar (2017	, 2018,)	Month	Date	Serial	
Tracker		fear (2017	, 2016,)	wonth	Date	Serial	



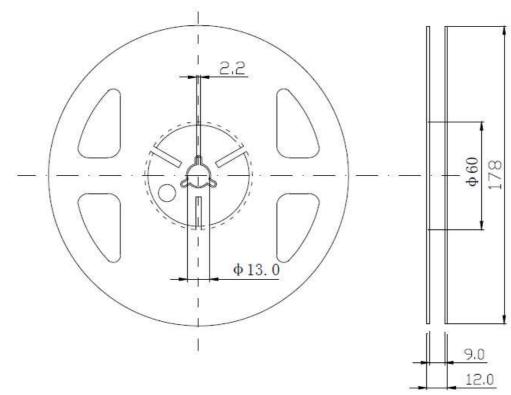
#### Packaging Information: 3000pcs Per Reel

# **Tape Dimension**



Unit: mm Tolerance: +/-0.10 mm

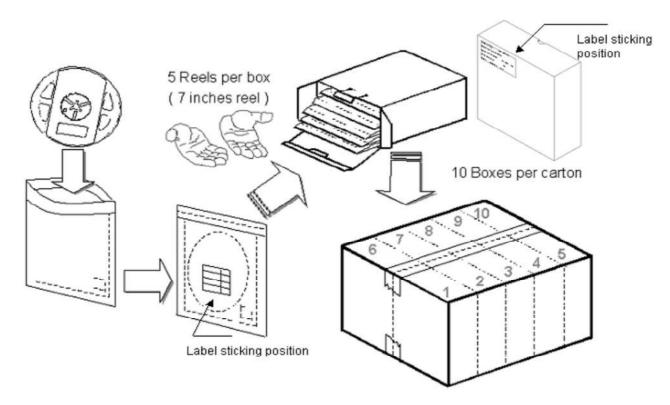
#### **Reel Dimension**



Unit: mm Tolerance: +/-0.15mm



# Packing Dimension



5 boxes per carton are available depending on shipment quantity.

	Specification	Material	Quantity
Carrier tape	Per EIA 481-1A specs	Conductive black tape	3000pcs per reel
Reel	Per EIA 481-1A specs	Conductive black	
Label	IN standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	IN standard	Paper	Non-specified

Others:

Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv,  $\lambda_D$  and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

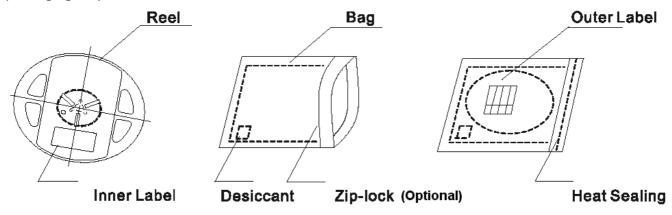


### **Dry Pack**

All SMD optical devices are **MOISTURE SENSITIVE**. Avoid exposure to moisture at all times during transportation or storage. Every reel is packaged in a moisture protected anti-static bag. Each bag is properly sealed prior to shipment.

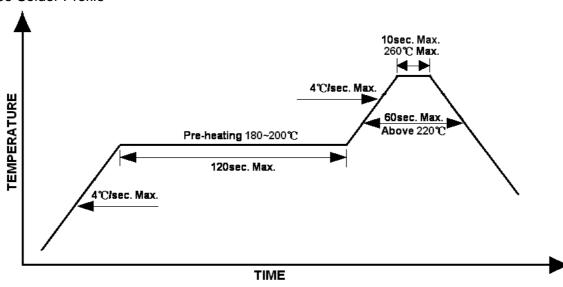
Upon request, a humidity indicator will be included in the moisture protected anti-static bag prior to shipment.

The packaging sequence is as follows:



#### **Reflow Soldering**

- Recommended tin glue specifications: melting temperature in the range of 178~192 °C
- The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



Lead-free Solder Profile



#### Precautions

- Avoid exposure to moisture at all times during transportation or storage.
- Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
- It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage.
- Avoid operation beyond the limits as specified by the absolute maximum ratings.
- Avoid direct contact with the surface through which the LED emits light.
- If possible, assemble the unit in a clean room or dust-free environment.

#### Reworking

- Rework should be completed within 5 seconds under 260 °C.
- The iron tip must not come in contact with the copper foil.
- Twin-head type is preferred.

#### Cleaning

Following are cleaning procedures after soldering:

- An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.
- Temperature x Time should be 50°C x 30sec. or <30°C x 3min
- Ultra sonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 °C max, <3min

#### **Cautions of Pick and Place**

- Avoid stress on the resin at elevated temperature.
- Avoid rubbing or scraping the resin by any object.
- Electro-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.



# **Reliability**

TailuresReferenceFor all reliability monitoring tests according to JEDEC Level 2J-STD-0201.) Baking at 85°C for 24hrs 2.) Moisture storage at 85°C f0% R.H. for 168hrsSolderability10/1/22/0JESD22-B102-B And CNS-5067Accelerated aging 155°C/24hrs Tinning speed: 2.5+0.5cm/s Tinning speed: 2.5+0.5cm/sResistance to soldering heat10/1/40/0CNS-5067Dipping soldering terminal only Soldering terminal only Soldering bath temperature A: 260+/-5°C; 10+/-1s B: 350+/10°C; 3+/-0.5s10/1/40/0CNS-118291.) Precondition: 85°C baking for 24hrs B: 350+/10°C; 3+/-0.5c0perating life test10/1/45/0JESD-A101-BTamb: 55°C Tamb: 55°C IF=20mA; duration 1000hrsHigh temperature bias10/1/20IN specs.Tamb: 55°C IF=20mA Duration: 1000hrsHigh temperature cycle10/1/40/0JESD-A101-A Left 2.2Tamb: 55°C IF=20mA Duration: 1000hrsPulse life test10/1/40/0JESD-A104-A Left 68-2-14, NbA cycle: -40 degree C 15min; +85 degree C 15min Thermal steady within 5 min 300 cycles 2 chamber/ Air-to-air typeHigh humidity type test10/1/40/0CNS-6117 90+5/-10% R.H. for 500hrs	Item	Frequency/ lots/ samples/	Standards	Conditions				
Preconditionmonitoring tests according to JEDEC Level 22.) Moisture storage at 85°C/60% R.H. for 168hrsSolderability1Q/1/22/0JESD22-B102-B And CNS-5068Accelerated aging 155°C/24hrs Tinning speed: 2.5+0.5cm/s Tinning: A: 215°C/3+1s or B: 260°C/10+1sResistance to soldering heatCNS-5067Dipping soldering terminal only Soldering bath temperature A: 260+/-5°C; 10+/-1s B: 350+/-10°C; 3+/-0.5sOperating life test1Q/1/40/0CNS-118291.) Precondition: 85°C bakin g for 24hrs 85°C/60% R.H. for 168hrs 2.) Tamb25°C; IF=20mA; duration 1000hrsHigh humidity, high temperature bias1Q/1/45/0JESD-A101-BTamb: 85°C Humidity: 85% R.H., IF=5mA Duration: 1000hrsPulse life test1Q/1/40/0IN specs.Tamb: 55°C IF=20mA, Duration: 1000hrsPulse life test1Q/1/40/0JESD-A104-A IEC 68-2-14, NbA cycle: -40 degree C 15min; +85 degree C Thermal steady within 5 min 300 cycles 2 chamber/ Air-to-air typeHigh humidity storage test1Q/1/40/0CNS-554100+10°C for 500hrs	item	failures	Reference					
to JEDEC Level 2   168hrs     Solderability   1Q/ 1/22/0   JESD22-B102-B And CNS-5068   Accelerated aging 155°C/24hrs Tinning speed: 2.5+0.5cm/s Tinning speed: 2.5+0.5cm/s     Resistance to soldering heat   CNS-5067   Dipping soldering terminal only Soldering bath temperature A: 260+/5°C; 10+/-1s B: 350+/10°C; 34'-0.5s     Operating life test   1Q/ 1/40/0   CNS-11829   1.) Precondition: 85°C bakin g for 24hrs 85°C / 60%R.H. for 168hrs 2.) Tamb25°C; IF=20mA; duration 1000hrs     High humidity, high temperature bias   1Q/ 1/45/0   JESD-A101-B   Tamb: 85°C Humidity: 85% R.H., IF=5mA Duration: 1000hrs     High temperature bias   1Q/ 1/20   IN specs.   Tamb: 55°C IF=20mA, lp=100mA, Duty cycle=0.125 (tp=125 µ s,T=1sec) Duration: 500hrs     Pulse life test   1Q/ 1/76/0   JESD-A104-A IEC 68-2-14, Nb   A cycle: -40 degree C 15min; +85 degree C 15min Thermal steady within 5 min 300 cycles 2 chamber/ Air-to-air type     High humidity storage test   1Q/ 1/40/0   CNS-5117   60-3°C 90+5/-10% R.H. for 500hrs		For all reliability	J-STD-020	1.) Baking at 85℃ for 24hrs				
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Cycle   300 cycles     2 chamber/ Air-to-air type     High humidity   1Q/ 1/ 40/ 0     Storage test   00+3°C     High temperature   1Q/ 1/ 40/ 0     CNS-554   100+10°C for 500hrs				Thermal steady within 5 min				
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High temperature 1Q/1/40/0 CNS-554 100+10℃ for 500hrs	<b>.</b> .			90+5/-10% R.H. for 500hrs				
	High temperature	1Q/ 1/ 40/ 0	CNS-554	100+10℃ for 500hrs				
storage test	storage test							
Low temperature 1Q/1/40/0 CNS-6118 -40+5°C for 500hrs		1Q/ 1/ 40/ 0	CNS-6118	-40+5℃ for 500hrs				
storage test	storage test							



#### **Revision History**

Changes since last revision	Page	Version No.	Revision Date
Initial Release		1.0	05-12-2017

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